Airway pathology in the premature - our experience in a tertiary paediatric ENT centre

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INTRODUCTION

- The relationship between prematurity and upper airway pathology is disputed^{[1][2]}.
- Advancements in neonatal intensive care units has led to improved survival rates^[3].
- Prolonged intubation predisposes to acquired airway pathology^[4]
- Prematurity may also increase the risk of multi-level airway pathology, such as simultaneous subglottic stenosis and laryngeal cleft^[1].
- Our aims:
 - Evaluate airway pathology in prematurely born children, including the relationship between prematurity and individual pathologies.
 - Explore the relationship between grade of prematurity and multi-level airway pathology.

METHODS

- Data for patients undergoing microlaryngobronchoscopy (MLB) at The Royal London Hospital was collected prospectively between January 2012 - October 2017.
- Patients were sub-classified by grade of prematurity:
 - Mild prematurity: 32 – 37 weeks
 - Very premature: 28 – 32 weeks
 - Extreme prematurity: <28 weeks

CONCLUSION

- Premature patients account for a significant proportion of the workload within our tertiary centre, likely due to improving neonatal care and survival in pre-term infants.
- We suggest that in premature patients presenting with symptoms of airway pathology, early paediatric ENT evaluation should be arranged, with a low threshold for MLB.
- Although prematurity was found to be associated with discovery of multi-level airway pathology, sub-group analysis did not suggest that there is a statistically significant relationship with grade of prematurity.

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RESULTS

- 367 patients underwent MLB:
 - 56 (15.3%) were premature.
 - Of all identified airway pathology, 23.4% were in premature patients (figure 1).

Figure 2 - Paediatric airway pathologies

- 73.3% of diagnoses of subglottic stenosis had a history of intubation.
- Multi-level airway pathology was seen in 23% of premature infants, demonstrating a statistically significant association (odds ratio 3.396; 95% C.I: 1.697-6.842; p-value <0.0016).
- Sub-group analysis demonstrated no relationship between the grade of prematurity and incidence of airway pathology, severity of airway disease or incidence of multi-level airway pathology.

Figure 1 – Diagnosed Airway Pathologies: Term VS Pre-term

- Premature infants accounted for 33% of subglottic stenosis, 24% of laryngomalacia and 19% of laryngeal cleft diagnoses (figure 2)
- 87.5% of premature patients had one or more airway pathologies diagnosed.

DISCUSSION

Our findings demonstrate that premature patients account for a significant proportion presenting to our centre. Despite accounting for 15.3% of all patients undergoing MLB, they represent 23.4% of identified pathology, including a significant proportion of the individual pathologies. Prematurity confers a statistically significant risk of multi-level airway pathology, and should be considered when performing MLB. Although the risk of airway pathology is related to prematurity, we found no relationship between incidence of airway pathology, incidence of multi-level pathology or severity of airway pathology (grade of subglottic stenosis or type of laryngeal cleft) and the grade of prematurity.